REMARKS/ARGUMENTS

By this amendment: (1) the specification has been rewritten to correct minor typographical errors; (2) new claims 52-59 have been added without adding new matter; (3) a version with markings to show the changes made to the specification is submitted; and (4) a clean set of pending claims as they will appear after entering this amendment is submitted.

This application now includes claims 1-60.

Attached hereto is a marked-up version of the changes made to the specification by the current amendment. The attachment is captioned "Version with markings to show changes made". For the convenience of the Examiner and the applicant, a "Clean Set of Pending Claims" is also attached hereto, containing all the claims as they will be after entering this amendment.

Since no new matter is submitted with this amendment, it is respectfully requested that this amendment be entered prior to examination.

Respectfully submitted,

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Version with markings to show changes made

Paragraphs beginning at page 25, line 13 through page 26, line 22 have been amended as follows:

In FIG. 14, there is shown an exploded, fragmentary, partly broken away perspective view of a sample pre-cooler 260 having the housing 270, first and second parallel mounting bases [272] 273 and 274, a first pair of first and second end guides 276A and 276B and a second pair of first and second end guides 278A and 278B for the ballast coil of tubing 288, first and second side guides 280 and 282 for the ballast coil of tubing 288, a seal 284 and the top support 286. The ballast coil of tubing 288 is wound in approximately seven loops over the end and center guides, with a first end 290 extending through the top support 286 and a second end 292 extending through the top support 286 where they are engaged by corresponding ones of the first and second fittings 294 and 296. With this arrangement, the ballast coil of tubing is wound within the pre-cooler 260 in a manner that permits substantial heat loss to a coolant within the ballast box. However, any suitable arrangement can be used to hold a ballast of tubing or other kinds of reservoirs that permit the liquid to be adequately cooled before it is applied to the containers.

To mount the top support 286 to the housing 270, ten nuts are spaced along the four side walls of the housing 270 on the interior surfaces with three being on each of the longs sides and two are each of the shorter end side, nuts 302A-302E being shown in FIG. 14. These nuts are fastened to the side walls with that tapped openings having a longitudinal axis vertical and parallel with the side walls. The ten nuts are aligned with ten openings 300A-300J along the edges of the top support 286 which rests on the upper edge of the side walls of the housing 270. The openings 300A-300J are arranged to receive

screws which fit through the top support 286 and engage the nuts 302A-302J so as to hold the cover against the top edge of the housing 270. One such screw is shown at 308 aligned to fit through the opening 300J and others 300A-300I are shown within the top support 286. Each of the guides 276A-276B, 278A-278B, 280 and 282 have central openings with the upper openings being aligned with different ones of the six openings 310A-310F in the top cover to receive screws, one of which is shown at 304 aligned with the opening 310D and others of which are shown in place. The bottom openings of the guides have similar openings aligned to match with screws 312A-312F in the parallel mounting bases [272] 273 and 274 so that the guides are each held in place to receive a strand of the tubing 288. With this arrangement, the tubing 288 can be wound in approximately seven loops with the two ends extending through the fittings in the top support, one being connected from there to the hollow needle and the other being connected to receive the fluid.

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CLEAN SET OF PENDING CLAIMS

What is claimed is:

1. A method of sampling liquids comprising the steps of:

drawing liquid from a heated fluid;

cooling the liquid to a temperature lower than 84 degrees Fahrenheit;

causing the liquid to flow through a needle into a container after it is cooled until the container overflows;

removing the needle; and

closing the container automatically as the needle is withdrawn.

2. The method of claim 1 in which the liquid is cooled within a housing having a cooled interior for a sufficient amount of time to reduce its temperature to less than 84 degrees Fahrenheit prior to moving the liquid into the container.

3. The method of claim 2 in which the liquid is moved through a long ballast tube within the housing, said ballast tube being sufficiently long to maintain the liquid in the housing until it is at a temperature lower than 84 degrees Fahrenheit.

4. A method according to claim 1 further including the step of causing the liquid to flow continuously as the needle is withdrawn through a valve opening.

5. The method of claim 1 in which a valve is open to atmosphere for less than ten minutes.

6. The method of claim 1 in which the step of causing the liquid to flow includes the substeps of automatically opening a valve with a narrow clearance between the needle and valve opening just before the needle enters the container to permit the needle to pass through it; causing the liquid to flow outwardly from the needle; causing the liquid to continue to flow as the needle is removed; and automatically closing the valve as soon as the needle clears the valve opening, whereby the liquid retains its volatile material during sampling.

7. A method in accordance with claim 1 in which the liquid is caused to flow from the needle laterally outwardly as the needle is withdrawn.

8. A method in accordance with claim 6 wherein the steps of automatically opening and closing the valve include the substep of rotating a rotatable member.

9. A method in accordance with claim 1 further including the step of sequentially bringing a plurality of containers into juxtaposition with at least one filling station for filling the container.

10. A method in accordance with claim 6 in which the substeps of opening the valve and closing the valve are synchronized with the steps of inserting a needle and

withdrawing a needle so as to reduce the communication of the interior of the container with the atmosphere.

11. An apparatus for sampling liquids, comprising:

means for cooling a liquid to below 40 degrees Fahrenheit;

means for causing the liquid to flow through a needle into a container until the container overflows;

means for removing the needle; and

means for closing the container automatically as the needle is withdrawn.

12. The apparatus of claim 11 in which the means for cooling includes a housing having a cooled interior.

13. The apparatus of claim 12 in which the means for cooling further includes a long ballast tube within the housing, said ballast tube being sufficiently long to reduce the temperature of the liquid in the housing to a temperature lower than 84 degrees Fahrenheit.

14. An apparatus according to claim 11 further including means for causing the liquid to flow continuously as the needle is withdrawn.

15. The apparatus of claim 14 in which the means for causing the liquid to flow though the needle into a container includes:

means for causing the liquid to flow through the needle to the bottom of the container;

a valve with a narrow clearance between the needle and valve opening;

means for automatically opening the valve as the needle enters the container;

means for causing the liquid to flow outwardly from the needle and to overflow through the valve opening;

means for pumping the liquid as the needle is removed, whereby the liquid continues to flow; and

means for closing the valve as soon as the needle clears the valve opening, whereby the liquid retains its volatile material during sampling.

16. Apparatus in accordance with claim 15 further including means for causing the liquid to flow from the needle laterally outwardly as the needle is withdrawn.

17. Apparatus in accordance with claim 15 in which the valve includes a valve opening in a rotatable member, wherein the container is closed and opened automatically by rotating the rotatable member as the needle moves downwardly toward the container or upwardly away from the container.

18. A method of sampling liquid comprising the steps of:

cooling the liquid:

causing the liquid to flow through a needle into a container until the container overflows;

removing the needle; and

closing the container automatically as the needle is withdrawn.

19. The method of claim 18 in which the liquid is cooled within a housing having a cooled interior for a sufficient amount of time to reduce its temperature to less than 84 degrees Fahrenheit prior to moving the liquid into the container.

20. The method of claim 19 in which the liquid is moved through a long ballast tube within the housing, said ballast tube being sufficiently long to maintain the liquid in the housing until it is at a temperature lower than 84 degrees Fahrenheit.

21. A method according to claim 18 further including the step of causing the liquid to flow continuously as the needle is withdrawn through an opening.

22. The method of claim 18 in which a valve is open to atmosphere for less than ten minutes.

23. The method of claim 18 in which the step of causing the liquid to flow includes the substeps of automatically opening a valve with a narrow clearance between the needle and valve opening just before the needle enters the container to permit the needle to pass through it; causing liquid to flow outwardly from the needle; causing the liquid to continue to flow as the needle is removed; and closing the valve as soon as the needle clears the valve opening, whereby the liquid retains its volatile material during sampling.

24. A method in accordance with claim 18 in which the liquid is caused to flow from the needle laterally outwardly as the needle is withdrawn.

25. A method in accordance with claim 23 wherein the steps of opening and closing the valve include the substep of rotating a rotatable member.

26. A method in accordance with claim 25 further including the step of sequentially bringing a plurality of containers into juxtaposition with at least one filling station for filling the container.

27. A method in accordance with claim 23 in which the substeps of opening the valve and closing the valve are synchronized with the steps of inserting a needle and withdrawing a needle so as to reduce the communication of the interior of the container with the atmosphere.

28. An apparatus for sampling liquids, comprising:

means for drawing liquid;

means for cooling the liquid;

means for causing the liquid to flow through a needle into a container until the container overflows;

means for removing the needle; and

means for closing the container automatically as the needle is withdrawn.

29. The apparatus of claim 28 in which the means for cooling includes a housing having a cooled interior.

30. The apparatus of claim 29 in which the means for cooling further includes a long ballast tube within the housing, said ballast tube being sufficiently long to reduce the temperature of the liquid in the housing to a temperature lower than 84 degrees Fahrenheit.

31. An apparatus according to claim 28 further including means for causing the liquid to flow continuously as the needle is withdrawn.

32. The apparatus of claim 28 in which the means for causing the liquid to flow through the needle into a container includes:

means for causing the liquid to flow through the needle to the bottom of the container;

a valve with a narrow clearance between the needle and valve opening;

means for automatically opening the valve as the needle enters the container;

means for causing the liquid to flow outwardly from the needle and to overflow through the valve opening;

means for pumping the liquid as the needle is removed, whereby liquid continues to flow; and

means for closing the valve as soon as the needle clears the valve opening, whereby the liquid retains its volatile material during sampling.

33. Apparatus in accordance with claim 28 further including means for causing the liquid to flow from the needle laterally outwardly as the needle is withdrawn.

34. Apparatus in accordance with claim 28 in which a valve includes a valve opening in a rotatable member, wherein the container is closed and opened automatically by rotating the rotatable member as the needle moves downwardly toward the container or upwardly away from the container.

35. Apparatus in accordance with claim 28 further including means for sequentially bringing a plurality of containers and stations into juxtaposition with each other for filling of the containers.

36. A method of sampling liquid comprising the steps of:

cooling the liquid:

inserting a hollow needle into a container having a cap with a valve member and an opening in the valve member sized to narrowly receive the hollow needle;

causing the liquids to flow through the needle until the container overflows;

removing the needle; and

closing the container automatically as the needle is withdrawn.

37. The method of claim 36 in which the liquid is cooled within a housing having a cooled interior for a sufficient amount of time to reduce its temperature to less than 84 degrees Fahrenheit prior to moving the liquid into the container.

38. The method of claim 36 in which the liquid is moved through a long ballast tube within the housing, said ballast tube being sufficiently long to maintain the liquid in the housing until it is at a temperature lower than 84 degrees Fahrenheit.

39. A method according to claim 36 in which the hollow needle is extended through the opening in the valve member while the valve member opening is perpendicular to a longitudinal axis of the valve member and adapted to fit a container opening and turning the valve member to another position to close the container opening.

40. A method in accordance with claim 40 further including the step of automatically opening and closing the valve member.

41. The method of claim 40 in which the step of automatically opening and closing the valve member comprises the step of engaging a cam follower connected to the valve member with a cam.

42. An apparatus for sampling liquids, comprising:

means for cooling a liquid to below 40 degrees Fahrenheit;

means for causing the liquid to flow through a hollow needle into a container until the container overflows to a level on the top of at least a portion of a container cap;

means for removing the needle; and

means for closing the container automatically as the needle is withdrawn;

said container cap including an upper portion; said upper portion having a valve member and an opening in the valve member sized to narrowly receive the hollow needle in the valve member.

43. The apparatus of claim 42 in which the means for cooling includes a housing having a cooled interior.

44. The apparatus of claim 43 in which the means for cooling further includes a long ballast tube within the housing, said ballast tube being sufficiently long to reduce the temperature of the liquid in the housing to a temperature lower than 84 degrees Fahrenheit.

45. Apparatus according to claim 42 in which the valve member extends through the opening in the valve member while the valve member opening is perpendicular to a longitudinal axis of the valve member and is adapted to be aligned in one position with a container opening and in another position to close the container opening.

46. Apparatus in accordance with claim 42 in which the valve member includes a cam follower on one end adapted to engage with a cam for opening and closing the valve opening.

47. Apparatus in accordance with claim 42 further including a closure portion adapted to engage an opening of the container.

48. Apparatus according to claim 46 in which the valve member includes a valve member handle and the length of the valve member handle is no smaller than 0.240 inch nor greater than 0.750 inch.

49. Apparatus according to claim 48 in which the length of the valve member handle is no smaller than 0.125 nor greater than 1.6 inches.

50. Apparatus according to claim 49 in which the outer diameter of the valve member handle is no smaller than 0.700 inch nor greater than 0.950 inch.

51. Apparatus according to claim 45 in which a valve passageway has a diameter no narrower than 0.150 nor greater 0.500 inch.

52. A method of filling a container with liquid through a valve having a valve opening comprising the steps of:

placing a cap having said valve and a valve actuator on the top of the container;

actuating the valve actuator to open a conduit between the top and bottom of the cap to the bottom through said valve opening, whereby a needle may be inserted through the valve opening and into the container to fill the container while allowing liquid to flow up into the top of the cap; and

actuating the valve to close the opening after withdrawing the needle through the conduit when the container is filled, whereby the valve may be closed while liquid is above it;

said step of actuating the valve including the step of automatically actuating the valve actuator in synchronization with the needle.

53. A method in accordance with claim 52 further including the step of closing an opening in the top of the cap before the needle is inserted through the valve opening.

54. A method in accordance with claim 53 in which the step of closing an opening includes the step of moving a fluid socket of a needle assembly into an upwardly extending funnel shaped cavity of the cap, wherein the funnel is sized and shaped to receive the fluid socket of the needle assembly so the socket seals the cavity during filling.

55. A method in accordance with claim 53 in which the step of closing an opening includes the step of moving a fluid socket over the cap, wherein the cap is sized to fit within the socket.

56. A method according to claim 52 in which the step of inserting the needle includes the steps of:

inserting the needle through an upwardly extending funnel shaped cavity adapted to receive overflowing liquid;

inserting the needle through a valve member located below the cavity, wherein said valve member has an opening to narrowly receive a hollow needle wherein the valve may be closed while permitting liquid to be maintained in the cavity above the valve during filling of the container, thus preventing the container from being exposed to atmosphere through the valve;

inserting the needle through the narrow opening, wherein all valves between the bottom of the cap and the cavity are arranged to remain open until closed by an external force; and

filling the container as the needle is withdrawn until the funnel is full.

57. A method in accordance with claim 52 in which the valve opening is perpendicular to the longitudinal axis of the valve member, wherein the step of actuating the valve includes the step of aligning the opening in one position with the container to open the container, and aligning the opening in a second position to close the container.

58. A method in accordance with claim 52 in which the step of actuating the valve actuator includes the step of gripping the valve actuating member with a valve grip when the container is moved to a filling station, wherein a valve grip rotates in response to movement of a cam follower engaged by a cam shaft to either open or close the valve.

59. A method in accordance with claim 52 in which the step of actuating the valve actuator includes the step of turning a horizontally-positioned valve actuator to permit automatic opening and closing of the valve, wherein said valve actuator has a height no smaller than 0.250 inch nor greater than 0.750 inch.

60. A method in accordance with claim 52 in which the step of actuating the valve actuator includes the steps of turning a horizontally-positioned valve actuator to permit automatic opening and closing of the valve; said valve actuator having a length no smaller than 0.250 inch nor greater than 0.750 inch.